3.6 CULTURAL AND PALEONTOLOGICAL RESOURCES

Significance Criteria

Significance under NEPA related to Cultural and Historical Resources is determined through compliance with 40 CFR 1508.27(b)(8) and (b)(10), and with Section 106 of the National Historic Preservation Act. Determinations are subject to review and approval by the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer (THPO).

Significance for Paleontological Resources is reflected in terms of compliance with the Antiquities Act of 1906 (PL 59-209; 16 United States Code 431 et seq.; 34 Stat. 225), which calls for the protection of historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest on Federal land. Additional provisions appear in the Archaeological and Historic Data Preservation Act of 1974, as amended, for the survey, recovery, and preservation of significant scientific, prehistoric, historic, archaeological, or paleontological data, in such cases wherein this type of data might be otherwise destroyed or irrecoverably lost as a result of Federal projects. Paleontological resources are important for their scientific and educational value. Fossil remains of vertebrates are considered significant resources. Invertebrate fossils are considered significant if they function as index fossils. Index fossils are those that appear in the fossil record for a relatively short and known period of time, allowing geologists interpret the age range of the geological formations in which they are found.

3.6.1 KENOSHA PROJECT SITE

INTRODUCTION

From July through September of 2004 Phase I and II archaeological field investigations were carried out for the project site by the Center for Archaeological Research at Marquette University (CAR-MU) (Overstreet, *et al.*, 2004). This cultural resources study is summarized below and included in full as a confidential appendix to this EIS (**Appendix F**).

All cultural resources work was performed in compliance with Section 106 of the National Historic Preservation Act (NHPA) as amended, and its implementing regulations found at 36CFR Part 800. The Bureau of Indian Affairs (BIA) is the lead Federal agency for purpose of Section 106 compliance. Standards promulgated in Guidelines for Conservation Archaeology in Wisconsin (revised 1997), jointly endorsed by the Historic Preservation Division, Wisconsin Historical Society (SHPO) and the Wisconsin Archaeological Survey, Inc., a statewide professional organization, were strictly adhered to during the development and execution of this study.

Late Pleistocene Events

The landscape on which the proposed undertaking is situated is no older than approximately 15,000 years (Hansel, 1983; Schneider, 1983). Over the course of the last 15,000-20,000 years, the westward expansion and the eastward contraction of the Lake Michigan lobe of the Laurentide continental glacier deposited tills in the form of north-south trending moraines. During periods of ice advance or stability, Lake Michigan was impounded into glacial lakes whose shorelines occur at elevations well above the current level of Lake Michigan, approximately 177 meters (m) (580 feet) above mean sea level (AMSL).

Holocene Events

Beginning around 10,000 years BP, the Holocene ushered in the post-glacial landscape, climate, flora, and fauna of today. Vegetation following the onset of the Holocene was comprised of an open, mixed hardwood and coniferous forest. Arboreal species included pine, birch, balsam, and other deciduous species such as oaks and maples. The rainfall regimes began to decline, and, for an extended period of perhaps 1,000 to 2,000 years, regional vegetation responded to these droughty conditions. An open pine forest and grasslands dominated the region, perhaps from about 9,000-6,500 years BP. Population densities during the so-called "altithermal" declined and fine-grained, wind blown deposits (loess) blanketed much of the Midwest, although this mantle of wind-borne sediment was nowhere near as thick in southeastern Wisconsin as it was across the lower Midwest. By about 9,000 years BP the water level of the lake had dropped to a level of about 70 m (230 feet) AMSL, some 350 feet below the modern levels. At this time much of the Lake Michigan basin was covered by trees, the evidence of which can be seen at Kenosha in the Southport buried forest.

For the past 3,000 years there have been significant fluctuations in lake levels associated with droughty periods and with eras of significant precipitation such as the "Little Ice Age" (Baerreis and Bryson, 1965) that commenced about A.D. 1350 and persisted for a few hundred years. By approximately 5,000 years BP, certainly by the era of Late Archaic prehistoric populations, local ecology was very similar to that observed by the first European visitors to the locality of Somers township.

PREHISTORY

Paleoindian Period (13,400 BP to 10,500 BP)

Kenosha County and its neighboring counties, including Racine, Milwaukee, Waukesha, and Walworth, and Lake and Cook counties in Illinois, are unique in North America in that they harbored human occupation during the last ice-age at approximately 13,500 years ago. The earliest human inhabitants of Kenosha County generally, and Somers and Pleasant Prairie townships specifically, appear to have been nomadic hunters and gatherers whose primary subsistence was heavily slanted toward exploitation of Pleistocene mammals such as mammoth

and perhaps barren ground caribou and musk-oxen. During this time the environs of the project site would have been either a tundra-like habitat, or perhaps an open spruce parkland. Dubbed the Chesrow Complex from the typesite of this early culture at the Chesrow Site, these pre-Clovis cultures are known from other localities in southwestern Wisconsin where Stoltman (1998) has employed the term: "Chesrow/Price." Their remains in Kenosha are rare, as are the artifacts associated with Late Paleoindian occupation from about 8,000-10,000 years BP.

Archaic Tradition (10,500 BP to 3,000 BP)

The transition from Paleoindian traditions to those classified as "Archaic" are marked by several harbingers. The first of these is the obvious technological shift wherein lanceolate fluted and unfluted projectile points are replaced by stemmed and notched varieties. A second indicator of this transition is the shift from Pleistocene to Holocene habitats. Tundra is replaced by open spruce parkland, in turn giving way to closed spruce forests. Finally, new plant species, a function of changing climate and habitats, become more important in subsistence, and big game such as mammoth, mastodon, musk-ox, and caribou are replaced by an emphasis on forest and prairie animals including a diverse suite of smaller game.

Woodland Period (3,000 BP to A.D. 1,000)

Adaptations characterizing the Archaic Period carried into the early Woodland Period and subsequently developed into a variety of behaviors responding to environmental, subsistence, and social conditions. Well-defined traits marking the beginning of this period are the presence of ceramics, construction of earthen mounds for burials, and cultivation of plants. Throughout the period, populations increased, exotic goods representing extensive exchange networks become more commonplace, and burial customs become more elaborate. Subsistence practices remained rooted within cycles of hunting and gathering, but horticulture became progressively more important throughout the Woodland continuum.

Mississippian Period (A.D. 1,000 to A.D. 1,500)

Late prehistoric horticulturalists occupying the Midwest and Southeast are assigned to a period called Mississippian. To further distinguish groups of this period, all are identified as either Middle Mississippian: those living primarily in the fertile alluvial lands of the Mississippi River and its tributaries south of St. Louis, Missouri; or Upper Mississippian, including the Oneota: those living within the portion of the drainage located north of St. Louis including southern Wisconsin.

With the exception of a small handful of sites, evidence or sites securely affiliated with the Middle Mississippian culture are poorly documented in Wisconsin. Although general agreement exists that a genetic affinity links Oneota/Upper Mississippian and Middle Mississippian groups, the precise nature and temporal range of this linkage is disputed (cf. Hall, 1986; Overstreet, 1989, 1995). Oneota sites of the Upper Mississippian tradition are distributed throughout the upper

Midwest. In Wisconsin, the Oneota occupied a variety of sedentary and semi-sedentary settlements located throughout much of the state; however, the heaviest concentration, whether real or a function of research investigations, occurs in the southern half of the state (Gibbon, 1972; Glenn, 1974; Overstreet, 1978, 1989, 1995). The Oneota are characterized as village farmers pursuing a subsistence economy based on maize horticulture, fishing, and hunting (Hall, 1962). Their presence in Walworth, Kenosha, and Racine counties has not been demonstrated from other than a few artifacts found on the surface.

ETHNOGRAPHY

At various times during the historical period, southeastern Wisconsin has been occupied by the Menominee, Ojibwa, Potawatomi, and, to a lesser degree, the Illinois, Miami, Sauk, Winnebago (Ho-Chunk), and perhaps the Kickapoo. Sometimes two or more groups co-existed in the region, and at other times a particular group may have dominated. The health of the fur trade throughout the 17th and 18th centuries often dictated the nature of the occupation, as did claims to the region by French, British, or American interests. By the mid-19th century, however, European-introduced diseases decimated many if not all of the regional Native American populations (Mason, 1976; Green, 1993). So severe were these pandemic events that began as early as the 16th century, many survivors from diverse ethnic groups banded together to form new settlements. Co-residence among many Wisconsin Native American groups became commonplace by the 1700s.

HISTORICAL PERIOD

Euro-American settlement of the Kenosha area began in earnest almost simultaneously with the land cessions following the 1833 Chicago treaty. For example, the narrative of the Reverend Jason Lothrop (1903) reviews the formation and operation of "The Western Emigration Company" among which were several early settlers of the so-called Pike River settlement, subsequently named "Southport" and later, Kenosha. Lothrop and several others of the company departed Hannibal, New York in the spring of 1835. Their initial destination was Milwaukee, but, on encountering the extensive claims there of Solomon Juneau, Byron Kilbourn, Samuel Chase, and others, they quickly departed south to the Root River. Eventually, the small group found themselves at the mouth of the Pike River, a short distance east of the project site. By August 1835, J. Bullen Jr. and C.W. Turner established claims, subdivided the tracts, constructed homesteads, and began to sell off lots. Frank's (1903) account notes that: "About fifteen families, mostly from the town of Hannibal, came on during the summer and fall of 1835." By 1837 a temperance society had been formed and at this juncture the area boasted churches, schools, a post office, and at least two taverns. Native American residents of the area still were in the majority. Lothrop (1903: 462) notes that in 1835, some two years after the land cessions, Native Americans still inhabited the region:

> *"They were plenty among us, and through this county in 1835. We had frequent visits from them, and saw them in all parts of the county. Deer were then plenty, so much so that in making a survey of twenty miles or more, more than fifty might be seen and sometimes as many as twenty together. Where there was so much game, of course there were Indians, and they were often with us on our surveying excursions."*

From 1835-1840 various small schooners and steamers off-loaded people as well as goods and supplies at Southport (Kenosha), but this was done by lighters as the only navigation improvements were poles driven into the lake bottom for anchorage. Several piers and warehouses were completed in the years following 1840. By 1840, agricultural pursuits were expanded and a system of plank roads linked markets in the adjoining counties of Wisconsin and Illinois. Although population growth was relatively slow during much of the 19th century, by the early 20th century it began to accelerate.

As population increased, so did land under cultivation. Currently, dairy farming is a major farm enterprise along with row crops such as cabbages, corn, and soybeans, although in the past, wheat represented a major crop, as did barley. Dairy farming gained popularity after circa 1890. Currently, land use is balanced in the county between agriculture, tourism, and industry.

METHODOLOGY

Archives and Literature Search

Pre-field research entailed a comprehensive review of the data housed at CAR-MU's Milwaukee facility and at Madison, Wisconsin. Archives and serial file systems were also searched for site-specific information. Published literature sources consulted include: *The Wisconsin Archeologist*, a quarterly journal published since 1901; *The Wisconsin Magazine of History*, the journal of the State Historical Society of Wisconsin; *The Wisconsin Historical Collections* consisting of 20 volumes published between the years 1903 and 1920; and the *Bulletin of the Public Museum of the City of Milwaukee*, several of which detail archaeological investigations conducted in various Wisconsin localities. Unpublished sources subjected to scrutiny are represented by four different formats: (1) serial entry files; (2) map files; (3) manuscript files; and (4) archaeological survey reports. Three serial file systems were consulted. The first of these is the Wisconsin Archaeological Site Inventory, copies of which are housed at the Wisconsin SHPO (Office of the State Archaeologist). The second file is the Architectural/Historic Site inventory, also housed at the Historic Preservation Division. This inventory file includes both standing structures that have been identified as possessing architectural and/or historical significance and sites noted primarily for their historical characteristics, some of which include known archaeological deposits. Finally, the inventory of identified and codified burial sites, housed at the Burial Sites Preservation Office, Wisconsin SHPO, was also consulted.

Several map files were reviewed, including: (1) The Charles E. Brown Archaeological Atlas; (2) the Government Land Office survey records; and (3) local plat and deed maps. The Charles E. Brown Archaeological Atlas provides the locations of sites on county plat maps. The Government Land Office records consist of plats and survey notes that may provide information regarding pre-settlement vegetation, topography, and aquatic features, all important variables in determining potential site locations. In addition, dependent on the interests of individual land surveyors, cultural information such as the locations of Indian trails, camps and villages, maple sugar processing stations ("sugar bushes"), pioneer settlements, and early industrial improvements such as mills, roads, and early homes and farmsteads are frequently noted on these maps. Both map files are housed at the Archives Division, Wisconsin SHPO and the latter is available on microfilm at various repositories.

Field Survey

Field reconnaissance consisted of a systematic walk-over survey of the project site. The primary purpose of the reconnaissance survey was to ascertain specific land use conditions and to identify appropriate field methods to ensure comprehensive survey coverage. In addition, the survey crew sought to identify any surface indications of former homesteads, prehistoric mounds or intaglios, garden beds, corn-hills, or other surface indications of past occupation or utilization. Efforts were also initiated to contact local residents who may have collected artifacts at this location prior to the development of Dairyland Greyhound Park. With the exception of paved parking lots, access roads, and other facilities currently utilized by Dairyland Greyhound Park, surface transects were maintained at 10 m intervals. For the most part the reconnaissance was conducted on active and fallow agricultural lands, wood lots, and the low marshy margins of existing wetlands.

Phase II Field Methods

Three 2 x 2 m test excavation units were established at the three positive shovel probe locations identified in Survey Unit D. Excavation commenced in arbitrary 10 cm levels with masonry trowels and skimming shovels. Excavation Unit Level Forms were completed for each 10 cm increment. Soil was sifted through ¼-inch mesh screens. Excavations were documented by mapping of the unit level floors in plan view and also in profile, typically of the north wall of the excavation unit. Photographic records in color and black and white were also compiled for each of the three 2 x 2 m test units.

RESULTS OF INVESTIGATIONS

Archives and Literature Search

Previously Reported Archaeological Sites

The project site has not been the focus of previous archaeological survey investigations. Several field investigations have been carried out within a radius of one mile of the project site. A single historic homestead was recorded during the investigations at the Kenosha County Airport, immediately north of State Highway (STH) 158 (52nd Street). No other historic sites have been identified within the limits of the proposed undertaking or immediately adjacent to its boundaries. A total of seven archaeological sites have been recorded within the one-mile radius of the project site, but none were known to occur within the project boundaries. Six of the seven sites are of undetermined cultural affiliation and are characterized only as lithic scatters, campsites, workshops, or isolated finds. A single burial site is recorded in the Burial Sites inventory at the Wisconsin SHPO. However, this single record is a modern, maintained cemetery approximately ½ mile southeast of the project site.

Previously Reported Architectural/Historical Sites

Site 47 Kn 228 is recorded in the archaeological site inventory as a cabin-homestead site of 19th century Euro-American origin. This site is located within the facilities of the Kenosha County Airport and for all intents and purposes has been destroyed.

No information regarding the presence of potentially significant historical/architectural sites within or immediately adjacent to the project site is recorded in the database maintained by the Wisconsin SHPO.

Field Investigations

The majority of the project site is heavily vegetated, either in row crops, grassy and woody shrubs in fallow agricultural fields, mature oaks with a thick understory, or canary grass at lower elevations at wetland margins. Furthermore, few locations of natural alluvial or colluvial fills were observed during the reconnaissance. For the most part the project areas were characterized by Oak Creek Formation till either at or near the surface. In the woodlots, for example, there was a very well developed A horizon with an average thickness of 30 centimeters (cm), but in current and former agricultural lands the Ap horizon (plow zone) rests immediately atop the eroded till. Given these considerations of topography, geomorphology, and past and current land use at the project site, it was clear that if prehistoric and historic sites were to occur they would be at or near the present surface, i.e., within the upper 50-80 cm of soil.

Archaeological Sites

The project site was arbitrarily subdivided into five survey units, identified A-E. Intensive archaeological survey of units A-C and E failed to yield any evidence of prehistoric or early

historic occupation by prehistoric groups. Survey Unit D, however, did yield a sparse scatter of lithic debris and some of this detritus from chipped stone tool manufacture appeared to be thermally altered. Two isolated finds were recovered: 1) a bifacial thinning flake of local chert, and 2) a broken, late prehistoric or early historic era triangular projectile point. These isolates were recorded for their full data potential, given database serial numbers (47 Kn 392 and 47 Kn 393 respectively), and need no further consideration. Based upon the more than 179 shovel probes excavated within the defined limits of Survey Unit D, preliminary conclusions were that the archaeological deposits represented a small, transitory campsite. A site record was completed and forwarded to the Wisconsin SHPO for assignment of a site number. This site has been designated 47 Kn 394.

Architectural/Historical Sites

Archives and literature search revealed no potentially significant site or properties within or adjacent to the project site. A reconnaissance-level architectural survey was carried out by Dr. Linda A. Brazeau, Marquette University, on July 22, 2004. All standing structures were observed and evaluated for potential significance. Two residences appearing to be greater than 50 years in age were observed to the south of the project site, and immediately across 60th Street at its intersection with 104th Avenue. Due to planned development in the immediate vicinity, these residences do not appear to be eligible for inclusion in the National Register of Historic Places due to loss of setting, association and feel. However, pending SHPO concurrence during the Section 106 consultation process, these residences will be treated as potentially eligible. Impacts to historic properties are discussed in **Section 4.6**.

Phase II Investigations

Lithic materials were discovered at varying depths in all three test units during the Phase II investigations described above. The materials produced during excavation are detailed in Appendix X and are summarized here as comprising of lithic debris and one broken projectile point. Some of the lithic flakes found were determined to have come from the retouching of bifacial implements. All materials produced by the test pits were found in levels more recent than 14,000 years, and more specifically associated with the Middle Woodland Tradition.

CRITERIA FOR EVALUATION

National Historic Preservation Act

The National Historic Preservation Act of 1966 (as amended through 2000) authorizes the National Register of Historic Places (NRHP), a program for the preservation of historic properties ("cultural resources") throughout the Nation. The significance criteria for evaluating cultural resources for listing in the NRHP are defined in 36 CFR 60.4 as follows.

> The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and

local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

A. that are associated with events that have made a significant contribution to the broad patterns of our history;

B. that are associated with the lives of persons significant in our past;

C. that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or

D. that have yielded, or may be likely to yield, information important to prehistory or history.

Sites younger than 50 years, unless of exceptional importance, are not eligible for listing in the NRHP.

All properties change over time, therefore, it is not necessary for a property to retain all its historic physical features or characteristics in order to be eligible for listing on the NRHP. The property must, however, retain enough integrity to enable it to convey its historic identity; in other words, to be recognizable to a historical contemporary. The National Register recognizes seven aspects or qualities that, in various combinations, define integrity (National Park Service 1990). These seven qualities are listed below:

1. **Location** – the place where the historic property was constructed or the place where the historic event occurred.
2. **Design** – the combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting** – the physical environment of a historic property.
4. **Materials** – the physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
5. **Workmanship** – the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.
6. **Feeling** – a property's expression of the aesthetic or historic sense of a particular period of time.
7. **Association** – the direct link between an important historic event or person and a historic property.

To retain historic integrity a property will always possess several, and usually most, of these aspects. In order to properly assess integrity, however, significance (why, where, and when a property is important) must first be fully established. Therefore, the issues of significance and integrity must always be considered together when evaluating a historic property.

47 Kn 394

Preliminary Phase II investigations at 4 Kn 394 have provided information that serves to place this small prehistoric campsite within the Middle Woodland Tradition. The Havana Tradition-like corner notched projectile point recovered from Test Unit 2, Level 2 is similar to those found south of the project area in the Village of Pleasant Prairie (Overstreet, 1992). Middle Woodland materials have long been known from Racine and Kenosha counties (cf. West, 1903; Lapham, 1855; Gerend, 1904). Assuming that the site does represent a Havana Tradition-like manifestation, it should date to sometime between approximately 2,300 BP and A.D. 300. Overstreet (1992) identified and evaluated four Middle Woodland sites at the Village of Pleasant Prairie, all of which lacked subsurface features and were also notably devoid of fire-cracked rock. Designated as sites 47 Kn 158, 158, 169, and 179, the assemblages from these four sites differ in no material way from the assemblage recovered at 47 Kn 394. However, it should be noted that unlike the previous four sites, 47 Kn 394 harbors cultural materials in a primary depositional context while the Middle Woodland sites at the Village of Pleasant Prairie had all been cultivated for more than a century and their integrity had been significantly compromised. One of the primary concerns with regard to potential significance of 47 Kn 394 was its possible age and cultural affiliation. Phase I survey did not provide sufficient information to determine where in the solum the archaeological deposits originated. With the thin scatter of ostensibly heat-treated chert, the prospect was considered that if the deposits originated in the B soil horizon, they might be determined to be associated with the Chesrow Complex, a Late Pleistocene Paleoindian manifestation defined on the southeast Wisconsin uplands (Overstreet, 2004). However, this was determined not to be the case based on the presence of the Middle Woodland projectile point and the fact that all archaeological materials have their origins in the A soil horizon. As a result, the potential significance, relative to eligibility for the NRHP, is that 47 Kn 394 harbors *in situ* archaeological deposits that may be employed to aid in the understanding of Middle Woodland adaptive strategies on the southeast Wisconsin uplands. Current assumptions are that larger base camps occur at shoreline settings in localities at Racine and Kenosha, and perhaps at larger rivers such as the Pike, Root, and Des Plaines. The sites referenced above are likely short-term extraction camps that are part of an annual settlement-subsistence cycle employed by regional Middle Woodland populations. At this juncture, 47 Kn 394 is the only known site of this type with *in situ* archaeological deposits in eastern Kenosha County. Therefore, this site has been determined potentially eligible for the National Register of Historic Places.

SUMMARY AND CONCLUSIONS

Phase I and Phase II investigations at the project site have served to identify the presence of two isolated finds (47 Kn 392 and 47 Kn 393) and one small Middle Woodland campsite (47 Kn 394). The isolates were recorded and need no further consideration here. Site 47 Kn 394 was recommended potentially eligible for the NRHP under criterion D (as defined above) for its potential to yield information important in our prehistory.

PALEONTOLOGICAL RESOURCES

This section presents documentation on paleontological resources on the project site and in the surrounding region, as well as an analysis on the potential for unreported paleontological resources to be present on the project site. Paleontological resources are defined as the traces or remains of prehistoric plants and animals. Such remains often appear as fossilized or petrified wood or skeletal matter, imprints or endocasts, and reside in sedimentary rock layers. Fossil resources are non-renewable.

Introduction

The processes involved in the preservation of paleontological resources result in several types of remains. It is noted that only a small percentage of ancient life forms and their traces have been exposed to conditions favorable to preservation (Encyclopædia Britannica 1966). Factors affecting the persistence of paleontological resources vary between species, and broadly include geological formation processes, climate, soil and rock chemistry, and organism morphology. Paleontological resources are discussed here as fossil remains, although other types of remains occur elsewhere.

Fossils are the remains of plants and animals embedded in layers of rock, which have retained some degree of their original characteristics over a long period of time. Remains are buried under layers of sediment, which under building pressure become sedimentary rock. Paleontological remains can be those of organism structure, such as skeletal parts, shell, tree trunks, pollen, endocasts or imprints, or they can be remnants of activity, such as footprints or tunnels of burrowing organisms. Soft tissues are less frequently fossilized, because they usually decay before fossilization processes take place. Since fossil remains occur in sedimentary rock formations, they tend to persist unless the rock has undergone significant changes. Fossils therefore do not occur in metamorphic rock formations.

Fossils of considerable age may be subject to varying degrees of mineralization, at times resulting in the total replacement of original, organic matter by minerals. The agents of mineralization are most commonly comprised of calcium carbonates, such as calcite and aragonite, and silicates, such as quartz, opal and chalcedony. Less common materials are iron disulfides, such as pyrite and marcasite, limonite, sulphates, such as gypsum, phosphates, such as calcium phosphate and

vivianite, and glauconite. These minerals are typically transported in minute quantities by seeping water, with aggregation over time.

Regional Geological Formation

The earliest recorded rock formations in Wisconsin are of Precambrian age, older than 560 million years. These rocks resulted primarily from volcanic activity and underground movement of magma. Being igneous formations, they do not contain fossil material. During the latter part of the Cambrian Period (560 to 520 million years BP), much of Wisconsin was underneath a shallow inland sea. Gradual erosion of surrounding land areas resulted in undersea sandstone and shale deposits containing trilobites and a few other fossils.

The inland sea withdrew from much of the area by the end of the Cambrian, but remained in eastern and southern Wisconsin during the Ordovician (520 million to 440 million years BP) and Silurian Periods (440 to 410 million years BP). In this time, reefs with coral, brachiopods and other organisms covered the sea bottom, later to form carbonate layers that in turn became limestone and dolostone. The inland sea retreated to southeastern Wisconsin during the Devonian Period (410 to 365 million years BP), and was gone by the end of the Devonian.

Approximately 1.5 million years before present, Ice Age (Pleistocene epoch – 1.5 million years to 10,000 years BP) glaciers began to move over most of the state. These glaciers and the resulting river and lake systems left alluvial deposits to cover the older Precambrian and Paleozoic rocks. It is these deposits that contain remnants of Ice-Age fauna, such as mammoths, mastodons and giant bison. The Pleistocene epoch gave way to the Holocene (see above).

Records and Literature Search

The online database at the University of California Museum of Paleontology (UCMP) was consulted in May of 2005. No results for Kenosha County were available. Contact was made on May 27, 2005 with Dan Joyce, Senior Curator of Exhibits and Collections at the Kenosha Public Museum. Per Mr. Joyce, no unified database resources were available for paleontological resources in the region. Online resources were consulted at http://www.woolymammoth.org, maintained by an organization of professional, avocational and amateur archaeologists and paleontologists known as *Friends of the Ice Age*. Other online resources were searched at the websites of the U.S. Geological Survey and the Wisconsin Geological and Natural History Survey. The cumulative results of the records and database search are described below.

Project Site and Vicinity

No paleontological resources have been reported for the project site (Dan Joyce, pers. comm. on May 27, 2005), nor were observed during the field investigations documented above. However, more than 30 sites containing mammoths, mastodons, musk ox, giant beaver, reindeer, stag moose, giant bison and other Pleistocene mammals have been reported throughout Kenosha

County. Most of these were found *in situ* with artifacts or defleshing marks, and thus have become topics for regional archaeology.

Conclusions

While no known paleontological resources occur on the project site, three factors lend to the potential for subsurface paleontological deposits to be discovered during earth-moving activities. These factors are 1) regional geological formation described above; 2) soil composition for the project site as described in **Section 3.2**; and 3) reported paleontological finds in the county. Please see **Section 4.6** for discussion on impacts to paleontological resources related to the project alternatives.

3.6.2 KESHENA SITE

In August and September, 1993, the Great Lakes Archaeological Research Center (GLARC) conducted a Phase I archaeology survey and prepared a Report of Investigation for the Proposed Keshena Casino Development Site on the Menominee Reservation in Menominee County, Wisconsin (Overstreet and Meir, 1993). The results of that report were submitted to the Menominee Indian Tribe of Wisconsin Tribal Historic Preservation Office (THPO) for review and concurrence. As the document has been accepted by the THPO, all identified mitigation measures must be followed if any type of ground disturbing activity is proposed in the surveyed area. This cultural resources study is summarized below and included in full as a confidential appendix to this EIS (**Appendix N**).

The results of the 1993 study by Overstreet indicate a vast range of settlements spanning approximately 10,000 years. Essentially, the full range of western Great Lakes prehistory is represented to varying degrees in the known archaeological record on the Menominee Reservation. At the same time, the specific history of occupation by the Menominee tribe, as well as others during historic times may be encountered here. A seriated culture history for the region is provided in **Appendix N** of this EIS.

PREHISTORY

Paleoindian Period (13,400 BP to 10,500 BP)

Paleoindian sites are rare throughout the state of Wisconsin. A Clovis-related spearpoint from the Big Eddy locale, manufactured from heat-treated Galena chert, is the only firm evidence of such early populations within the study area.

Archaic Tradition (10,500 BP to 3,000 BP)

Early Archaic (10,500 to 8,000 BP) implements are known in the Keshena area and from the Big Eddy site. As with the evidence from Paleoindian times, Early Archaic materials are scarce and perhaps indicative of low population density in the region.

Evidence for occupation of the Menominee Reservation by Middle Archaic (8,000 to 5,000 BP) populations is more abundant. Tools and items of decorative adornment fashioned from native copper are reported from several sites. Side-notched projectile points of the Raddatz style are known from many sites including the Keshena and Big Eddy locations.

By the Late Archaic (5,000 to 3,000 BP), stemmed projectile points of the Durst type were in use as part of the chipped stone tool complex at the Big Eddy, La Belle, and Keshena locations.

Woodland Period (3,000 BP to A.D. 1,000)

The Woodland tradition is subdivided into three categories, similar to the Archaic. Early Woodland begins approximately 3,000 BP, is followed by the Middle Woodland Period (2,300 BP to A.D. 400), and ends with the Late Woodland period around A.D. 1100. Two important elements of material culture for the Woodland Period include the development of ceramic wares (pottery) and the construction of earthen mounds for mortuary practices. Affiliation with an Adena-like and Red Ocher complex is known from the La Belle Lake site, and from Keshena. Characteristic incised over cord marked pottery has also been found at the Big Eddy, Five Islands, and Makimitas sites.

Specimens clearly related to the Hopewell complex (2,300 BC to A.D. 300) of the Middle Woodland Period are also in evidence here. Such specimens as exotic flint knives or projectile points, along with cache blades of Indiana hornstone or Dongola chert, were found at the Keshena, Kackwatch, and Five Islands sites.

Evidence of at least two distinct late Woodland prehistoric cultures is abundant on the Menominee Reservation, including the Effigy Mound tradition, with cord-impressed ceramics dating between A.D. 700-1000; and another unnamed tradition of similar ceramic style, with the addition of the application of a collar on the exterior rim of the vessel, which persisted until shortly after A.D. 1100.

Mississippian Period (A.D. 1,000 to A.D. 1,500)

Evidence for Middle Mississippian presence, sometime between the years A.D. 1000-1200 is equivocal. Three vessels, an engraved shell tempered beaker, a brown-slipped Powell Plain jar, and a jar similar to the style Cahokia Cordmarked, indicate ties or contacts with Middle Mississippian populations in the St. Louis area. The Watasa Lake Swamp site may be the only location on the reservation where such materials have been found.

ETHNOGRAPHY

Segments of the Tribe ranged throughout Wisconsin and into Michigan, Illinois, and Minnesota at various times during the historic period. The core area of settlements though was in east-central

and northeastern Wisconsin. It appears likely that sites within the confines of the present reservation boundaries would include components that could be dated to all three historic periods.

During the period after 1852, various settlements were established at Zoar, Crow, Keshena, We'ka, Keso, West Branch and South Branch. Some of these were later abandoned. By 1929 distinct settlements were established at Zoar, Neopit, Neconish, West Branch, Crow, Keshena, and South Branch. Many of these settlements, with the exception of Neopit (which was apparently established as the "new town" in 1906), may have been the locations of former settlements, perhaps even extending back to prehistoric use of the region by Menominee bands or lineages. It should also be noted that smaller settlements and individual households might have occurred virtually anywhere within the study area.

METHODOLOGY

Archives and Literature Search

Prefield research included review of published literature sources such as *The Wisconsin Archeologist*, a quarterly journal published continuously since 1901; *The Wisconsin Magazine of History*, the journal of the State Historical Society of Wisconsin; *The Wisconsin Historical Collections,* consisting of 20 volumes published between the years 1903 and 1920; and the *Bulletin of the Public Museum of the City of Milwaukee*, several of which detail archaeological investigations during the years that the museum conducted active field work in Wisconsin. Bulletin 10, No. 5 (Barrett and Skinner, 1932) is the primary reference for prehistoric and historic archeology on the Menominee Reservation.

Archive, manuscript files, and various maps were also consulted. These include the Wisconsin Archaeological Site Codification file, the Charles E. Brown manuscript file, and the Charles E. Brown Archaeological Atlas, all of which are housed at the State Historical Society of Wisconsin.

Map files in addition to those archives and records at the State Historical Society were consulted and include the Bernsteen map file, privately published, the Trygg map file, a privately published historic composite map based on information derived from Government Land Office (GLO) records, and the GLO plats themselves.

GLARC in-house resources were also consulted, including several prior investigations in the immediate project area (Overstreet, Chevalier, and Skenandore, 1992; Overstreet, Skenandore, and Chevalier 1992; Overstreet 1982; Wackman, 1985; Overstreet and Witkowski, 1989; P. Richards and Mier, 1992; Overstreet's [1982] personal analyses of reservation collections curated by the Milwaukee Public Museum; and information from G. Richard Peske's unreported Watasa Lake Swamp site excavations).

Information on historic reservation communities was gleaned from Keesing (1987) including an unpublished monograph (1928-1930) on file with the Archives Division, State Historical Society of Wisconsin. Additionally, a 1920 map prepared by the Forestry Branch of the Office of Indian Affairs, Department of the Interior, was used to assess possible significance of historic sites.

Field Survey

Phase I survey was accomplished by systematic shovel probing. Shovel test transects were aligned in cardinal directions. Shovel probes were conducted at 15 m increments. The diameter of each probe was approximately 35-45 cm. Excavation was carried into and below the B-horizon. Typically, at the Keshena site, this meant a depth of approximately 30-40 cm. Spoil from each probe was passed through ¼-inch mesh, observed, and recorded. All holes were immediately backfilled. If cultural debris was encountered in a probe, the interval was reduced to increments of approximately 5 m and the site boundary delineated and mapped.

RESULTS OF INVESTIGATIONS

Archives and Literature Search

In 1932 Barrett and Skinner indicated sites and mounds in the general area of the Keshena site. However, none of the reported data relating to what they designated as "Keshena area" were site-specific. A 1992 survey (Richards and Mier, 1992) indicated the presence of both large prehistoric sites and small historic encampments on the western margin of the survey locality. Another survey, conducted in the fall of 1992 for the proposed construction of State Highway 47, also noted the presence of historic settlements on the eastern margin of the survey locality.

Field Investigations

The survey resulted in the identification and delineation of both a prehistoric site (47 Me 94) and a historic site (47 Me 95).

47 Me 94

This site is comprised of a very limited scatter of lithic debris, all of which consists of quartz. One shovel probe yielded a wedge, or bipolar, core. A single waste flake and three pieces of quartz shatter attributed to stone tool manufacture were also found at this site. Whether the site represents a small extraction camp or some other form of habitation site cannot be determined from the limited information presently at hand.

47 Me 95

This site dates from the early to middle-19th century and may represent one of the many small domestic sites established when the Menominee Reservation was settled by the various bands of the Tribe following the land cessions in the 19th century. The site was identified by the various pits and berms associated with a former structure at this location.

SUMMARY AND CONCLUSIONS

A Phase I archaeology survey of the Keshena Casino development site conducted in 1993 resulted in the location and identification of two sites; one prehistoric and one historic (47 Me 94 and 47 Me 95 respectively). The resulting report was reviewed with the directors of Real Estate Services and Historic Preservation for the Menominee Tribe of Indians of Wisconsin. It was determined that construction of the Keshena Casino, as planned, would not disturb either of the two sites identified, therefore no impacts to historic properties would occur as a result of the proposed project. It was recommended that the two sites be preserved in place. It was further recommended that, if in the future, the two sites are threatened by development, then more detailed studies would be appropriate to determine their eligibility for the National Register of Historic Places. The detailed studies would also be necessary to determine appropriate long-term management of the sites.

PALEONTOLOGICAL RESOURCES

This section presents documentation on paleontological resources on the project site and in the surrounding region, as well as an analysis on the potential for unreported paleontological resources to be present on the Keshena site.

Regional Geological Formation

The geological formation processes for the Wisconsin region have been addressed in **Section 3.2** and above. As discussed in **Section 3.2**, the bedrock underlying Menominee County and the Menominee Indian Reservation has been classified chiefly as Precambrian, Middle-proterozoic (2.5 billion to 543 million years before present [BP]) Wolf-River Rocks, specifically composed of rapakivi, granite and syenite. Other parts of the county are composed of Phanerozoic, Cambrian sandstone, with some dolomite and shale. The ground below the project site is comprised of the

former, while lenses of the latter occur elsewhere in the vicinity. The Wolf-River formations found at the Keshena site are igneous in origin, and therefore would not contain fossil matter.

Records and Literature Search

The online databases at the UCMP and at the Wisconsin Geological and Natural History Survey were consulted in August, 2005. No data for Menominee County was available in either database. AES staff consulted David Grignon, Tribal Historic Preservation Officer (THPO) for the Menominee Indian Tribe of Wisconsin in August, 2005. No records for paleontological resources exist with the Menominee THPO (David Grignon, pers. comm. on August 15, 2005).

Project Site and Vicinity

No records of paleontological materials have been found for the project site and vicinity. Furthermore, no fossils or other paleontological site indicators were noted during Dr. Overstreet's field investigations in 1993 (**Appendix N**).

Conclusions

The ground at the Keshena site is comprised of materials not typically associated with fossil deposits. No records for Menominee County and the Menominee Indian Reservation exist with the UCMP and the Wisconsin Geological and Natural History Survey. No reports for paleontological resources have been filed with Menominee's THPO. Further, no paleontological materials were observed during field investigations in 1993. Therefore, it is not anticipated that paleontological resources would be present at or near ground surface at the Keshena site.